# Natural Sciences and Engineering Research Council

# Report on Plans and Priorities

2007-2008
Estimates

**Maxime Bernier**
**Minister of Industry**

Canada

# TABLE OF CONTENTS


**TABLE OF CONTENTS** ..... 1

**SECTION I – OVERVIEW** ..... 3

Minister's Message ..... 4
Management Representation Statement ..... 6
Summary Information ..... 7
Departmental Plans and Priorities ..... 9
Operating Environment ..... 9
Program Priority #1: Develop Tomorrow's Discoverers and Innovators ..... 11
Program Priority #2: Build on Canada's Strength in Discovery ..... 13
Program Priority #3: Seize Emerging Research Opportunities ..... 15
Program Priority #4: Realize the Benefits of University Research ..... 18

**SECTION II – ANALYSIS OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME** ..... 21

Analysis by Program Activity ..... 22
Strategic Outcome #1: Highly Skilled Science and Engineering Professionals in Canada ..... 23
Program Activities ..... 23
Strategic Outcome #2: High Quality Canadian-based Competitive Research in the NSE ..... 26
Program Activities ..... 27
Strategic Outcome #3: Productive Use of New Knowledge in the NSE in Canada ..... 31
Program Activities ..... 31

**SECTION III – SUPPLEMENTARY INFORMATION** ..... 34

Organizational Information ..... 35
Mandate ..... 35
Council and Governance Structure ..... 35
NSERC Governance Structure ..... 35
NSERC Organizational Chart ..... 36
Departmental Links to Government of Canada Outcomes ..... 37
Pilot Programs and Recent Initiatives ..... 38
Pilot Programs ..... 38
Recent Initiatives ..... 39
Measuring the Impact of Government Investments ..... 39
NSERC Participation in Government-Wide Initiatives ..... 40
Service Improvement Initiative (SII) ..... 40
Table 1: Departmental Planned Spending and Full-Time Equivalents ..... 42
Table 2: Voted and Statutory Items Listed in Main Estimates ..... 43
Table 3: Services Received Without Charge ..... 43
Table 4: Sources of Non-Respendable Revenue ..... 44
Table 5: Details on Transfer Payment Programs (TPPs) ..... 44
Table 6: Internal Audits and Evaluations ..... 45

**SECTION IV – ANNEXES** ..... 48

Annex 1: List of Abbreviations ..... 49

# SECTION I – OVERVIEW

## *Minister's Message*

Canada's New Government is committed to fostering a strong, competitive economy that benefits Canada and all Canadians. To achieve this goal, I firmly believe that our government must create an environment that encourages and rewards people who work hard, that stimulates innovation, and that avoids unnecessary regulatory burden. By modernizing and improving Canada's marketplace frameworks, we will ensure stability and fairness while creating new opportunities and choices for businesses, consumers and all Canadians.

Over the past year, our government has taken significant steps to improve Canada's economy. Early in our mandate we presented Budget 2006, which contained measures aimed at improving our quality of life by building a strong economy that is equipped to lead in the 21st century. These measures focused on making Canada's tax system more competitive internationally, and outlined our commitments to reduce paper burden on businesses and to continue to support science and technology in Canada.

Last fall, we presented a long-term economic plan in the Economic and Fiscal Update. *Advantage Canada: Building a Strong Economy for Canadians* focused on creating five Canadian advantages that will give incentives for people and businesses to excel and to make Canada a world leader.

One of these proposed advantages, called the "Tax Advantage," will create conditions more favourable to business in Canada by effectively establishing the lowest tax rate on new business investment in the G7. As well, the "Entrepreneurial Advantage" will ease the regulatory and paperwork burden imposed on business by ensuring that regulations meet their intended goals at the least possible cost.

**The Industry Portfolio consists of**:

- Business Development Bank of Canada [1]
- Canadian Space Agency
- Canadian Tourism Commission [1]
- Copyright Board Canada
- Industry Canada
- National Research Council Canada
- Natural Sciences and Engineering Research Council of Canada
- Registry of the Competition Tribunal
- Social Sciences and Humanities Research Council of Canada
- Standards Council of Canada [1]
- Statistics Canada

[1] Federal Crown corporations do not prepare Reports on Plans and Priorities.

Through *Advantage Canada*, our government committed to supporting science and technology in Canada, and underscored some of the elements of a science and technology strategy that will sustain research excellence in Canada and increase the competitiveness of the Canadian economy.

Canada's New Government has repeatedly demonstrated that we are committed to getting things done for all Canadians. As we move forward, we will work more closely than ever with our stakeholders and the provincial and territorial governments, and we will continue to foster an environment where the marketplace functions as efficiently as possible, and keep encouraging investment in Canadian innovation and in research and development.

It gives me great pleasure to present the annual *Report on Plans and Priorities* for the Natural Sciences and Engineering Research Council of Canada, outlining its main initiatives, priorities, and expected outcomes for the upcoming year.

Maxime Bernier
Minister of Industry

## *Management Representation Statement*

I submit for tabling in Parliament, the 2007-08 Report on Plans and Priorities (RPP) for the Natural Sciences and Engineering Research Council (NSERC).

This document has been prepared based on the reporting principles contained in the *Guide for the Preparation of Part III of the 2007-08 Estimates: Reports on Plans and Priorities and Departmental Performance Reports.*

- It adheres to the specific reporting requirements outlined in the Treasury Board Secretariat (TBS) guidance;
- It is based on the department's Strategic Outcomes and Program Activity Architecture that were approved by the Treasury Board;
- It presents consistent, comprehensive, balanced and reliable information;
- It provides a basis of accountability for the results achieved with the resources and authorities entrusted to it; and
- It reports finances based on approved planned spending numbers from the Treasury Board Secretariat.

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Suzanne Fortier
President, NSERC

## Summary Information

**Raison d'être:**

*NSERC works to make Canada a country of discoverers and innovators for the benefit of all Canadians. To achieve this, we invest in people, discovery and innovation in Canadian universities and colleges.*

**Financial and Human Resources:**
**($ millions)**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| $899.8 | $899.3 | $890.3 |
| 319 FTE[1] | 319 FTE | 319 FTE |

**Departmental Priorities:**

| Name | Type |
|---|---|
| 1. Develop tomorrow's discoverers and innovators | Ongoing |
| 2. Build on Canada's strength in discovery | Ongoing |
| 3. Seize emerging research opportunities | Ongoing |
| 4. Realize the benefits of university research | Ongoing |

[1] Full-time equivalent

**Program Activities by Strategic Outcome:**

| | | Planned Spending[2] ($ millions) | | | |
|---|---|---|---|---|---|
| | **Expected Results** | **2007-2008** | **2008-2009** | **2009-2010** | **Supports Priority #** |
| **Strategic Outcome #1: People**<br>**Highly skilled science and engineering research professionals in Canada** | | | | | |
| 1.1 Promote Science and Engineering | Student interest in research in the sciences, math and engineering is encouraged | $4.1 | $4.1 | $4.1 | 1 |
| 1.2 Support Students and Fellows | A supply of highly qualified Canadians with leading-edge scientific and research skills for Canadian industry, government and universities | $136.4 | $134.6 | $130.3 | 1 |
| 1.3 Attract and Retain Faculty | Enhanced research capacity in science and engineering | $167.8 | $167.9 | $167.9 | 1, 2 |
| **Strategic Outcome #2: Discovery**<br>**High quality Canadian-based competitive research in the NSE** | | | | | |
| 2.1 Fund Basic Research | The discovery, innovation and training capability of university researchers in the NSE is enhanced | $403.6 | $403.2 | $398.5 | 1, 2, 3 |
| 2.2 Fund Research in Strategic Areas | Research and training in targeted and emerging areas of national importance is accelerated | $57.7 | $59.7 | $59.7 | 1, 2, 3, 4 |
| **Strategic Outcome #3: Innovation**<br>**Productive use of new knowledge in the NSE in Canada** | | | | | |
| 3.1 Fund University-Industry-Government Partnerships | Mutually beneficial collaborations between the private sector and researchers in universities, resulting in industrial or economic benefits to Canada | $115 | $114.4 | $114.4 | 4 |
| 3.2 Support Commercialization | The transfer of knowledge and technology from Canadian universities and colleges to the user sector is facilitated | $15.2 | $15.4 | $15.4 | 4 |
| **TOTAL** | | **$899.8** | **$899.3** | **$890.3** | |

[2] Includes costs for administration of NSERC programs totalling $40.8 million in 2007-08.

# *Departmental Plans and Priorities*

## Operating Environment

NSERC aims to maximize the value of public investments and to advance prosperity and quality of life in Canada by supporting the creation and transfer of knowledge in the natural sciences and engineering (NSE) and by ensuring that people are trained to discover, develop and use that knowledge. NSERC has a track record of success demonstrated by sound investments reinforced by a rigorous peer review process.

NSERC is the primary federal agency investing in postsecondary research and training in the natural sciences and engineering (NSE).Through its grants and scholarships programs, NSERC:

- annually funds 11,000 research professors at Canadian universities and colleges. Their discoveries advance knowledge and form the foundation of technological development by businesses as well as improvements in environmental quality and public safety. Despite its small population, Canada ranks eighth in the world for scientific knowledge production in the natural sciences and engineering (NSE) and third in the G8 for the impact of the new knowledge it creates[3].

- supports 23,000 undergraduate and graduate students and postdoctoral fellows each year. These highly skilled people form the human capital necessary for Canada's competitiveness and economic growth. NSE graduates have among the lowest unemployment rates and highest salaries in the country[4].

- supports university-industry research collaborations and training through partnerships with 1,300 Canadian businesses. Participating companies report a wide range of benefits from these collaborations; they strengthen their ability to adopt and adapt discoveries and new technologies leading to commercial products and they mobilize university researchers to address the needs of industrial users of research results and of technological advances.

Virtually all aspects of modern social and economic life are affected by advances in the natural sciences and engineering. The benefits of discovery, skilled people and innovation are the foundation on which to build national prosperity, adding value to goods and services as well as developing the skilled people that are able to conduct research, generate new knowledge, access knowledge created elsewhere, and adopt and adapt new technologies for businesses.

Wealth is created by adding value in goods and services that are sold in world markets. Knowledge, created through investments in R&D, is the basis for adding value. This is well understood worldwide by both established and emerging economies. Countries like China and India have increased their R&D expenditures as a percentage of GDP by 37% and 50% respectively since 2000 and have set ambitious targets to increase them even more in the coming years. In the global, knowledge-based economy, Canada faces growing competition from both

[3] Observatoire des Sciences et des Technologies
[4] Statistics Canada and NSERC Departmental Performance Report, 2004-05, pages 23-24 (http://www.tbs-sct.gc.ca/rma/dpr1/04-05/NSERC-CRSNG/NSERC-CRSNGd45_e.asp)

established and emerging economies with excellent educational systems and a large and skilled workforce. Beyond our traditional competitors among the G8, smaller economies such as Finland, Denmark, Israel and Sweden have surpassed Canada in research intensity[5]. These smaller economies are largely knowledge-based and focused on maintaining global leadership in key economic sectors.

Currently, Canada's expenditures in R&D as a percentage of GDP (1.99) are lower than the OECD average (2.26). Canada ranks at or near the top however in terms of the proportion spent in the higher education sector, including the proportion that is provided by business (8.3% vs. 6.1% OECD average)[6]. These figures reflect the importance of a strong academic sector to the country; without it, our companies would lose a crucial source of knowledge and skilled people.

These realities are reflected in the Government of Canada's high-level outcome areas within the whole of government framework. Specifically, under the economic affairs cluster, a key Government of Canada outcome is an **innovative and knowledge-based economy** (see page 37, Departmental Links to Government of Canada Outcomes) As described above, NSERC is a key instrument in managing federal investments in higher-education R&D in support of business productivity and Canada's prosperity in a global knowledge-based economy.

As a result of the significant federal investments made since 1997, many of which are managed by NSERC, Canada's S&T environment has been revitalized. World-class researchers are being recruited to Canadian universities[7], state-of-the-art research equipment and infrastructure are being installed and used, while many important new research projects have been launched. The momentum in Canada's research, training and innovation capacity has allowed the nation to perform above its class in international benchmarks of knowledge production and impact. Canadian students are highly sought after on the international scene and widely considered to be very well trained. Canadian researchers are welcome partners and strong contributors in international research projects[8]. There has been strong growth in the last six years in the commercialization outputs of university research[9,10]. NSERC has also seen strong growth in the number of companies investing in its partnership programs. Currently, more than $45M/year is invested by Canadian industry in the Collaborative Research and Development Program alone. Companies contribute $1.50 for every dollar awarded by NSERC to their university partners.

The Granting Council Review announced in Budget 2006 examined a number of issues including governance, performance measurement and results, value for money (in particular, ensuring the excellence of funded research), relationships with government, and cross-agency coordination and alignment. NSERC provided extensive input to the review and will work with Industry Canada and NSERC's Council to determine what further actions will be undertaken.

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[5] OECD Main Science and Technology Indicators, November 2005

[6] OECD Main Science and Technology Indicators, November 2005

[7] For example, 359 researchers have been attracted from abroad to take up a Canada Research Chair (http://www.chairs.gc.ca/web/about/publications_e.asp)

[8] For example, the Neptune project in the field of oceanography ( http://www.neptunecanada.ca/) is a joint Canada-USA initiative and the network on ultra-fast laser science led by Japan (http://www.jsps.go.jp/english/core_to_core/outline.html) .

[9] Statistics Canada

[10] AUTM 2004 Canadian Licensing Survey (http://www.autm.net/surveys/dsp.surveyDetail.cfm?pid=28)

The anticipated federal science and technology strategy, which was also announced in Budget 2006, is expected to address research and development activities undertaken in the private sector and in universities and, therefore, may include recommendations that relate to NSERC's mandate and activities.

In 2007-08, NSERC will fund research, training and innovation to support four critical priorities:

1. develop tomorrow's discoverers and innovators;
2. build on Canada's strength in discovery;
3. seize emerging research opportunities; and
4. realize the benefits of university research.

## Program Priority #1: Develop Tomorrow's Discoverers and Innovators

### Objective

NSERC will continue to support the development of new researchers in the NSE and, increasingly, the development of HQP for a highly educated workforce with experience in meeting the technology needs of industry and business. NSERC will also continue to support research to improve the ability of educators at the primary and secondary levels to help youth develop an interest in science and mathematics.

### Background

Canada needs a workforce which is both highly educated, and skilled in the natural sciences and engineering for it to compete in the knowledge economy. Such people are trained in university laboratories and classrooms by our scientists and engineers, using NSERC's scholarship and training programs and research support. Qualified science and engineering graduates represent the most important mode of transfer of scientific and technical knowledge from academia to the user sector.

Canada ranks low in terms of the percentage of the 30-34 year old population holding a doctoral degree in the NSE[11]. The gap with the U.S. at the master's and doctoral levels was noted in the recent report of the Institute for Competitiveness and Prosperity as a factor that negatively affects Canadian productivity[12]. Given our relatively small population base and the increased reliance on human talent for economic development, Canada needs to ensure that every individual has the opportunity to develop to his/her full potential.

In supporting this priority in the future, the following needs will be taken into consideration:

- **Professional skills** – One of the key findings of the Expert Panel on Commercialization[13] was the importance of human capital to Canada's innovation performance. There is a

[11] National Science Foundation and OECD
[12] Institute for Competitiveness and Prosperity, *Rebalancing Priorities for Canada's Prosperity*, March 2006
[13] *People and Excellence: The Heart of Successful Commercialization, April 2006* (http://strategis.ic.gc.ca/epic/internet/inepc-gdc.nsf/en/tq00068e.html)

growing recognition that new and talented researchers require, as well as advanced scientific and engineering training, the appropriate professional skills – such as project management, marketing, the ability to work in teams, intellectual property management, and financial analysis – to translate new discoveries from home and from around the world into economic and social benefits for Canadians.

- **International experience** – Opportunities to access financial support and structured programs for mobility in graduate education and research, to attend a foreign institution or research facility as part of their training, are not as readily available to Canadian students and fellows in comparison with their counterparts in other industrialized countries. Participation in such activities is especially low in the natural sciences and engineering. The benefit of supporting international travel and exchanges for a significant number of Canadian students in the NSE is threefold: first, students gain valuable research experience at world-class research organizations and learn novel research techniques; second, by collaborating with international counterparts, Canadian professors and students are able to develop a network of potential future collaborators and access the new discoveries and knowledge created by researchers outside Canada; finally, students who travel abroad to work and study at world-class facilities can become effective marketers for Canadian innovations around the world.

## Management Priorities

NSERC is one of many players contributing to the education and training of these highly qualified people; its critical role lies in supporting the development of the next generation of research professors as well as industrial and government scientists and engineers. The following management priorities are aligned to NSERC's program priority to train the next generation of NSE knowledge professionals in Canada:

- Invest $129.6 million in 2007-08 to provide scholarships and fellowships to students and fellows studying at universities or conducting research in Canadian industrial labs.
- Partner with MITACS, a Network of Centres of Excellence (NCE) in the mathematical sciences, and with the Fonds québécois de la recherche sur la nature et les technologies (FQRNT) to increase the number of internship opportunities available for students to conduct research in industry.
- Expand programs that promote university-industry collaboration and training in environments outside academia to expand the non-technical professional skills of students.
- Continue to work with partners in Japan, Taiwan and the United Kingdom and implement new agreements with India to provide additional opportunities for international training. As part of the development of an International Strategy for NSERC, further options for international training will be examined.
- Support five multi-disciplinary research centres that work to improve research into primary and secondary school science and math education, in collaboration with provincial stakeholders.

- Provide support to Aboriginal graduate students in the NSE so that they may travel to Aboriginal communities and become active role models for youth, encouraging more young people to consider careers in science and engineering.
- Work with key stakeholders to identify ways to improve enrolment levels, graduation rates and the acquisition of professional skills by science and engineering graduates.

## Program Priority #2: Build on Canada's Strength in Discovery

### Objective

NSERC will continue to provide stable multi-year support for Canadian professors' research programs to ensure Canadian universities can attract and retain excellent researchers and maintain advanced research laboratories and facilities. This will result in the creation of knowledge, a capacity to access discoveries made around the world and a highly educated workforce.

### Background

Countries around the world are recognizing the importance of a strong base of research excellence and a highly educated workforce for prosperity and sustainable development in today's world. There are numerous examples, including the United States, based on its National Academies' report "Rising above the Gathering Storm"[14], and Germany[15], which has recently reviewed its science policy. Both these countries (and many others such as Japan) plan to put increased emphasis, and investment, in basic research and nurturing excellence in science.

The number of scientists and engineers active in research has been growing rapidly since 1998. This is great news for Canada as it means our research capacity is building. In the most recent Discovery Grants competition, NSERC received funding applications from more than 924 first-time applicants. Across all Discovery Grant holders, 30% have received their first grant in the period since 2002 and will be seeking funding renewals in the years ahead. These well-qualified researchers need research funding from NSERC to be able to contribute to the creation of new knowledge and discoveries, and to help educate the next generation of scientists and engineers.

Some of the factors that underpin this priority include the following:

- **Momentum of federal investments in S&T** – Canada has taken important steps to increase its investment in university research through the Granting Councils, the Canada Foundation for Innovation (CFI), the Canada Research Chairs and the Canada Graduate Scholarships. These have dramatically improved our landscape to the point that Canada is now attracting the best and brightest researchers to its well-equipped university laboratories, including many scientists and engineers attracted and repatriated from other countries.

[14] http://www.nap.edu/catalog/11463.html

[15] Science, Vol. 313 14 July 2006.

In this context, NSERC's challenge is to maintain the momentum created by these important investments by ensuring that these researchers have the resources to continue to perform at an internationally competitive level, and are able to attract the very best students from around the world. The best researchers are highly mobile, and will go to countries that offer them the best conditions for success. The competitiveness of Canada's research efforts depends on ensuring that the Canadian research environment is optimal. Recipients of Canada Research Chairs also require research grants to conduct their programs of research. Researchers need access to well-equipped laboratories and other research resources to conduct their research. The CFI and its co-funding partners have put in place many world-class facilities across the country, but cover only a fraction of the operating expenses required to run them, and only for a limited time (3-5 years). Many investments require significant and long term commitments: the Canadian Light Source in Saskatoon, the Sudbury Neutrino Observatory Laboratory (SNOlab) and the Neptune Project on the west coast[16] are just a few but among the largest. In addition, while CFI is very effective in supporting the acquisition of large pieces of equipment and the creation of new laboratories, it falls to NSERC to support the purchase, replacement and maintenance of the large number of smaller tools and instruments that run all day, every day, in thousands of academic research labs across the country.

- **Canadian presence and participation in international S&T** – NSERC encourages researchers to interact and collaborate with international researchers through various programs designed to support such efforts. With increased support, Canadian researchers and students could more fully participate in international research projects, have the means to access world-class research facilities abroad, attract excellent foreign researchers to visit Canada and build international networks and contacts. There are also many opportunities to increase collaborations with scientists in emerging and developing countries as well as support international collaborations involving academic, industrial and government researchers. As Canada contributes 4% of world scientific knowledge, the other 96% must be accessed from abroad.

- **Under-represented groups in science and engineering** – Women and Aboriginals continue to be under-represented in a number of disciplines within the NSE. There are various reasons for this difference, including poor access to research and training opportunities, a lack of role models and personal factors. To meet Canada's requirements for increases in the number of HQP, it is essential to engage all pools of talent and encourage them to reach their potential.

## Management Priorities

In order to build on Canada's strength in discovery, the following actions will be taken.

- NSERC will provide $387.4 million in funding in 2007-08 through programs that support basic research, allow researchers to purchase modern research equipment and contribute to the operation of unique regional and national research facilities and institutes.

[16] http://www.sno.phy.queensu.ca/, http://www.lightsource.ca/, http://www.neptunecanada.ca/

- NSERC will invest $164.9 million in faculty support programs[17] that allow universities to attract and retain excellent researchers and develop faculty positions in areas of industrial relevance or national need in the natural sciences and engineering.
- For its largest program, the Discovery Grants program, NSERC will review the structure of the peer review committees, as well as undertake an International Review to carefully examine the success rates in this program and the quality of research supported. The review of success rates will be conducted by an international committee and will include consultations with Canadian stakeholders. Success rates in the Discovery Grants program will be considered in the context of NSERC's whole program structure and overall funding approach for research in the NSE.
- NSERC will complete the development of an International Strategy that will identify objectives and mechanisms to increase Canadian researchers' ability to participate in international S&T activities such as multi-national research projects, access foreign labs and host foreign researchers in Canada.
- NSERC will continue to work with the university community and other stakeholders to implement appropriate strategies to better address the under-representation of women and Aboriginals in the NSE.

## Program Priority #3: Seize Emerging Research Opportunities

### Objective

NSERC will continue to identify promising research opportunities and rapidly expand support for research, training and innovation in areas where Canada has the potential to be a world leader.

### Background

The fields of scientific and engineering research are undergoing dramatic renewal. Increasingly, dynamic research partnerships, reaching across disciplinary and national boundaries, combine talents and experience in ways that allow insights and breakthroughs to flourish.

With the rapid pace of such new scientific breakthroughs, a number of countries, e.g. Ireland (development of a successful software industry), Singapore (gaining world-class expertise in the biomedical sciences) and Britain, pursue a selective strategy aimed at focusing efforts on a few areas where they can achieve leadership and impact. Canada too must compete globally, but it is clear that we cannot be research and business leaders in all sectors. With substantial input from the Leaders' Roundtable on Commercialization, in April 2006 the Conference Board released a report entitled, "Picking a Pathway to Prosperity: A Strategy for Global-Best Commerce." The report advocates for building upon Canada's broad base of research excellence, setting priorities and targeting some of our resources on areas where Canada has the potential to achieve maximum impact and global-best status. This Roundtable of more than fifty industry leaders, university presidents and deputy ministers argue that choosing priority niches is the most important element of a strategy to compete successfully in the global economy.

[17] Including $133.2 million in funding for the tri-agency Canada Research Chairs program.

NSERC is already targeting major investments toward strategic opportunities in order to more rapidly expand research, training, and innovation in emerging strategic areas. Our capacity to compete at the world scale rests on our ability to form strong strategic partnerships, both at home and internationally so as to integrate research expertise and resources for increased benefits and maximum impact. The investment of significant funds will enable Canadian researchers to seize the research opportunities that will lead to a greater impact for their work and enable Canada to play a major role in subsequent innovation.

NSERC estimates indicate that it allocates approximately 60% of its total funding toward research activities within the four clusters of Canadian S&T strength that were identified in the Council of Canadian Academies' recent study. In June 2006 , the Council was asked by the Government of Canada, via Industry Canada, to explore Canada's strengths in Science and Technology (S&T). Their report, *The State of Science and Technology in Canada*, [18] helps to set the context for the government's consideration of S&T policy. The report identifies the following four clusters of S&T strength in Canada: natural resources; information and communication technology; health and related life-sciences and technologies, and environmental sciences and technology.

The following initiatives support this program priority:

- **Accelerating Excellence** – Each year, a select group of researchers reach a key point in their work when a substantial boost in funding would enable them to rapidly and significantly increase their impact. Within the Discovery Grants Program, NSERC is launching a new initiative to provide substantial resources to a small group of outstanding researchers. These Accelerator Supplements will be highly targeted to outstanding researchers who have a well established research program and are at a key point in their careers at which they can make, or capitalize on, a significant breakthrough, but who are being held back by insufficient funds.

- **Strategic Partnerships** – In order to enhance research capacity in a promising new field, such opportunities must first be identified and prioritized. As the Government of Canada cannot fund every potential opportunity, investment choices must ensure sufficient resources are mobilized to allow Canadian researchers to have an impact in such highly competitive emerging areas, which often span several traditional disciplines.

  Canada's future prosperity depends upon our ability to establish research and business leadership in key areas. Increased partnerships and strategic investments through NSERC will strengthen Canada's competitiveness in the global economy. NSERC is well-positioned to identify and prioritize strategic investments in emerging platforms such as quantum computing, nanotechnology, and other areas of strategic importance to the country. The workshops, projects, and networks of the Strategic Partnership Programs (SPP) of NSERC provide a concerted means to focus resources on a limited number of areas ensuring that Canada's highest priority research challenges are addressed and that we develop the research talent we will need to compete in the knowledge-based economy. NSERC's Strategic Partnerships and Innovation Platforms accelerate research

[18] The complete report is available online at: http://www.scienceadvice.ca/documents/Complete%20Report.pdf

and training in targeted areas that can strongly enhance Canada's economy, society and/or environmental stewardship within the next ten years. Seven new target areas were launched in January 2006 (see page 30). These areas were selected following a year and a half of extensive consultations with key stakeholders - senior university researchers, industry representatives and government and non-governmental researchers, research managers and policy leaders - and analysis of other national and international strategies and reports.

The involvement of partners is not only key to translating the research results into applications, it is a central part of NSERC's strategy for alignment, to better integrate resources across the university, industry and government research communities and thus build the critical mass of human and physical infrastructure necessary to address complex research challenges. NSERC's new Regional Offices are also an important tool in building partnerships, promoting the participation of all regions in these efforts and encouraging companies across Canada to become partners in these initiatives.

- **International collaboration and competition** – The rapid pace of scientific breakthroughs offers opportunities for Canadians to become pioneers in new research domains, with the economic and social advantages that a competitive position in science often brings. Seizing opportunities for leadership in areas where Canada has strengths cannot be done in isolation from what happens elsewhere. Canada must both compete and collaborate with many other countries that may wish to develop a world-class research base in similar areas of strategic interest but also offer potential for collaboration on major research initiatives for greater leverage of Canada's investments.

  The significant federal investments in university research and training since 1997 have been very successful in re-establishing Canada's reputation worldwide as a key player in research and innovation. Canadians already collaborate on a number of high-profile international projects and NSERC sees the opportunity to build on this success so that Canadian researchers and students may fully participate in international research projects, bring the best from abroad to Canada's leading edge centres and access world-class foreign research facilities. NSERC currently spends about 5% of its budget on international activities.

  NSERC is currently developing an International Strategy that will position Canada as a lighthouse for international collaboration. Here again focus is important and efforts must be targeted to areas of strength and importance to Canada, and to countries with whom enhanced collaborations will bring maximum benefits.

  NSERC created the Special Research Opportunities (SRO) program in 2003 as the main vehicle through which opportunities for international collaborations could be initiated. Through this program, NSERC can also issue targeted calls for proposals, for example, to participate in collaborative research efforts with counterpart agencies in Canada and abroad, or one-time scientific opportunities such as the International Polar Year. In the last four years, NSERC has increased the annual budget of the SRO program to $12M.

The Networks of Centres of Excellence program, which NSERC administers, has recently launched the International Partnership Initiative (NCE IPI) to provide existing networks with additional support to develop and enhance linkages with the best centres of excellence in the rest of the world; $7 million has been allocated to this pilot initiative. Thanks to a contribution from Canada's International Development Research Centre (IDRC), the NCE IPI will also build new relationships with researchers from the developing world. To encourage NCEs to collaborate with organizations from low and middle income countries (LMIC), IDRC is allocating an additional $2M to support the research and networking costs of the LMIC participation.

### Management Priorities

The following management priorities for 2007-08 will help NSERC achieve its objective of identifying and funding new research opportunities as they become apparent:

- NSERC will invest $64.9 million for research and training in areas of strategic importance to the country and in areas of emerging opportunities for research, training and innovation, such as the Innovation Platform on quantum information processing that will enable Canada to consolidate its position as a recognized leader in this field.
- NSERC will invest $2 million per year for the next three years for Accelerator Supplements within the Discovery Grants program, to enable a select group of researchers to more rapidly attain world prominence in their respective field.
- NSERC will continue to implement its Strategic Partnerships suite of programs, including the launch in 2007 of a new three-year pilot program of workshops, co-led by business and academics, to develop new university-industry research relationships.
- Through the Special Research Opportunity (SRO) program, NSERC will issue calls for proposals in response to unique research opportunities, including opportunities to jointly fund research with counterpart agencies in Canada and abroad, in order to achieve greater leverage of NSERC's research funding.

## Program Priority #4: Realize the Benefits of University Research

### Objective

NSERC will increase the impact of research and training on Canadian industries' competitiveness and accelerate the translation of research results into commercially successful innovations.

### Background

NSERC's partnership programs have a proven record of increasing collaboration between the academic, industrial and government sectors, and provide a full spectrum of support for students from the undergraduate to the postdoctoral level to gain industry-based research training. Through such collaborations, industry is able to access knowledge, ideas and technologies, as well as specialist expertise that can lead to the development of new products, processes and services. Industry also gains access to students, which often leads to hiring new staff with the most advanced skills and knowledge. In short, such collaborations result in greater productivity. University researchers, in turn, address issues of interest to industry, develop new research directions and are often able to use these experiences to develop more relevant curricula for the

benefit of future students. Students and fellows involved in these programs develop important professional skills and are often hired by the supporting company once the project is completed. With experienced staff and an excellent record of accountability in the effective use of public funds, NSERC is well-positioned to actively promote research, training and innovation with relevance to, and in partnership with, Canadian businesses and industries.

The following considerations and analysis underpin NSERC's actions to realize the benefits of university research:

- **Industry investments in R&D** – Canada has invested substantial amounts to strengthen the research capacity of universities, colleges and research hospitals. However, studies by the Conference Board of Canada and the Association of Canadian Manufacturers and Exporters indicate that industry's under-investment in R&D and insufficient capacity to transform ideas into marketable products and services constitute a major weakness. NSERC's Research Partnerships Programs play an important role in promoting increased industrial investments in R&D. NSERC's Regional Offices are an important tool in this process, providing an NSERC presence and promoting NSERC programs to companies across Canada.

- **Receptor capacity and innovation performance** – NSERC has identified several areas that must be addressed in order to improve Canada's innovation performance. NSERC recognizes that it will need to coordinate its efforts with other stakeholders to address these issues. Some of the areas that NSERC can help address include the following:

    - **Innovation culture** – There is a need for university researchers to see their activities as part of a national innovation system. The potential of new knowledge and research advances to lead to wealth creation must be more widely recognized and pursued by universities. In turn, a broader acceptance is needed from industry that the results of university research can benefit their business performance.
    - **Research transfer** – The impact and effectiveness of knowledge and technology transfer from academia to the user sector must be improved in order to more fully harness the discoveries made at Canadian postsecondary institutions.
    - **Partnerships** – The number and scope of university-industry research collaborations and exchanges must continue to increase in order to take advantage of the research capacity at Canadian universities.
    - **International** – International collaborations involving university and industry researchers must be increased in order to foster greater access to and adoption of new technologies developed around the world and to increase the economic impact of Canadian companies' innovations.

- **The role of community colleges in the Canadian innovation system** – Canada has a national network of colleges that are closely connected to local business and industry and sometimes form a direct technology link between university-based fundamental research and the application of this research by small- and medium-sized enterprises (SMEs) in

the local community. The colleges are particularly well positioned to enhance innovation and economic revitalization within their communities and to play a critical role in building an innovative and productive economy. NSERC has begun to address the needs of community colleges to carry out this important function through its College and Community Innovation Program,[19] which is currently funded on a limited pilot basis.

## Management Priorities

NSERC will continue to support a broad spectrum of activities that include targeted research, strategic networks, university-industry collaborative projects, technology transfer and capacity building for the mobilization of intellectual property. In 2007-08, the following management priorities will help Canada realize the benefits of federal investments in research, training and innovation:

- NSERC will invest $159.0 million in partnership programs that support innovation and $14.4 million in programs that support commercialization.
- NSERC will continue to promote its partnership programs through industrial associations, trade shows and by using the resources of the NSERC Regional Offices to develop networks of potential partners for NSERC programs.
- NSERC will work with the National Research Council (NRC) and the Business Development Bank (BDC), building upon their respective and complementary strengths, to accelerate the commercialization of publicly-funded research.
- Options to increase international collaborations involving university and industry researchers will be examined as part of the development of an International Strategy for NSERC.
- As the Networks of Centres of Excellence program (NCE) enters its 18th year of operation, and in conjunction with a regularly scheduled program evaluation exercise, the NCE Steering Committee (Presidents of the three granting agencies and Deputy Minister of Industry Canada), has set up an independent International Committee to get advice on the future of the program. In support of the work of the International Committee, a "Blue Sky" session was organized at the NCE Annual Meeting on December 5th 2006, and the outcome of that session has been summarized in a discussion document that is being circulated to a wider audience of stakeholders for input.

[19] This program is being undertaken as a partnership between NSERC, the Association of Canadian Community Colleges and the Canadian Manufacturers and Exporters.

# SECTION II – ANALYSIS OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME

## *Analysis by Program Activity*

The following section outlines NSERC's activities and provides financial and contextual information regarding NSERC's programs and services. Planned spending figures in this section do not include administration expenses. In 2007-08, NSERC will spend $40.8 million on the administration of the programs below, which represents approximately 5% of NSERC's total budget. For more information on planned administration expenses, refer to the financial tables in Section III. Full-time equivalent (FTE) figures are calculated based on planned program spending, as many employees are responsible for functions across multiple program activity areas.

NSERC is reviewing its Program Activity Architecture (PAA) to ensure programs' classifications reflect their primary objective, as well as to harmonize the PAA with recent program changes and evolution. To this end, NSERC will prepare a submission to the Treasury Board Secretariat in 2007 to update its PAA. Pending Treasury Board Secretariat approval, such changes will be reflected in the 2008-09 Estimates.

### NSERC Program Activity Architecture

| | 1.0 People | 2.0 Discovery | 3.0 Innovation |
|---|---|---|---|
| **Strategic Outcomes** | **Highly skilled science and engineering professionals in Canada** | **High quality Canadian-based competitive research in the NSE** | **Productive use of new knowledge in the NSE in Canada** |
| **Activities** | 1.1 Promote Science and Engineering<br>1.2 Support Students and Fellows<br>1.3 Attract and Retain Faculty | 2.1 Fund Basic Research<br>2.2 Fund Research in Strategic Areas | 3.1 Fund University-Industry-Gov't Partnerships<br>3.2 Support Commercialization |
| **Programs** | 1.1.1 Science Promotion and Education Research<br><br>1.2.1 Undergraduate Students Research Awards<br>1.2.2 NSERC Postgraduate Scholarships<br>1.2.3 Canada Graduate Scholarships<br>1.2.4 Postdoctoral Fellowships<br>1.2.5 Industrial R&D Fellowships<br><br>1.3.1 Canada Research Chairs<br>1.3.2 Industrial and Other Research Chairs<br>1.3.3 Prizes | 2.1.1 Discovery Grants<br>2.1.2 Special Research Opportunity Grants<br>2.1.3 Perimeter Institute<br>2.1.4 Research Capacity Development in Small Universities<br>2.1.5 Research Tools and Instruments<br>2.1.6 Major Resources Support Grants<br>2.1.7 General Support<br><br>2.2.1 Strategic Project Grants<br>2.2.2 Collaborative Health Research Projects | 3.1.1 Collaborative Research and Development Grants<br>3.1.2 Research Partnership Agreements<br>3.1.3 Networks of Centres of Excellence<br>3.1.4 Strategic Networks<br><br>3.2.1 Intellectual Property Mobilization<br>3.2.2 Idea to Innovation Program<br>3.2.3 College and Community Innovation Program |

## Strategic Outcome #1: Highly Skilled Science and Engineering Professionals in Canada

NSERC will help ensure a reliable supply of HQP for Canadian industry, government and academia by promoting science and engineering to Canadian youth, supporting students and fellows at Canadian universities and abroad, and providing support to university faculty.

## Program Activities

### 1.1 Promote science and engineering

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Science Promotion and Education Research | $3.9 | $3.9 | $3.9 |
| **Total** | **$3.9** | **$3.9** | **$3.9** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 2 FTE | 2 FTE | 2 FTE |

This program activity promotes popular interest in science, mathematics and engineering and aims to encourage more Canadian youth to pursue studies in these fields.

Stimulating young Canadians' interest in science and engineering and assisting in the development of pedagogical methods are critical to help develop tomorrow's discoverers and innovators.

NSERC programs within this activity include:

- **PromoScience** – This program supports non-profit organizations that work with young Canadians in order to build their interest in science and engineering, motivate and encourage their participation in science and engineering activities, and that assist teachers who are responsible for the science and math education of young Canadians.

- **Michael Smith Awards** – The Michael Smith Awards recognize the efforts of Canadians who have inspired public understanding and helped Canadians develop abilities in science and engineering.

- **Centres for Research in Youth, Science Teaching and Learning (CRYSTALs)** – This pilot program is designed to establish effective collaborations between researchers in education and those in science, mathematics and engineering, as well as with the education and science promotion communities. Given that K-12 education is a provincial responsibility, NSERC conducted a year-long series of consultations with provincial

counterparts before awarding the five grants announced in May 2005. This pilot program is discussed further in Section III.

The performance indicators to assess the effectiveness of these science promotion programs will be student interest and abilities in science, mathematics and engineering, as determined through surveys, progress reports and other program evaluation information collected by NSERC.

## 1.2 Support students and fellows

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Undergraduate Student Research Awards | $19.2 | $19.2 | $19.2 |
| Postgraduate Scholarships | $56.9 | $55.1 | $50.8 |
| Canada Graduate Scholarships | $31.5 | $31.5 | $31.5 |
| Postdoctoral Fellowships | $17.0 | $17.0 | $17.0 |
| Industrial R&D Fellowships | $5.0 | $5.0 | $5.0 |
| **Total** | **$129.6** | **$127.8** | **$123.5** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 54 FTE | 54 FTE | 54 FTE |

This program activity addresses NSERC's priority of developing tomorrow's discoverers and innovators. Specifically, NSERC's direct financial support for the most promising students and fellows provides Canada's next generation of researchers with the means to continue their advanced studies, ultimately leading to a reliable supply of HQP for Canadian industry, government and academic institutions.

NSERC also offers students and fellows the opportunity to conduct research with Canadian firms engaged in R&D activities. Industrially based award holders gain valuable experience in using their training in an industrial context, and participating companies benefit from a highly trained resource who can help increase their R&D capacity. In addition, this experience often results in students pursuing a career in a relevant industry. In all cases, the host company contributes to the financial support of the student or fellow.

NSERC provides direct financial support to students from the undergraduate to the postdoctoral levels through programs such as:

- **Undergraduate Student Research Awards** – Held in university or industry laboratories, these awards support a four-month work term for an undergraduate student. This program helps attract the best students to a career in research. It is also important for the development of research capacity at small universities in Canada that do not have postgraduate degree programs.

- **Postgraduate Scholarships** – At the master's and doctoral levels, NSERC provides an annual stipend that enables selected students to pursue advanced degrees. Up to four years' support is available over the course of a candidate's graduate education. Opportunities are available for study at institutions in Canada and abroad as well as at Canadian industrial laboratories. Canada Graduate Scholarships (tenable only at Canadian universities) are awarded to outstanding candidates.

  A limited number of scholarship supplements are also available for awardees involved in particular activities. For example, the Northern Research Internship supplements help defray the high costs of conducting research in the North in relation to one's studies.

- **Postdoctoral and Industrial R&D Fellowships** – These awards provide two years of support to researchers who have completed their Ph.D. They provide them with funds to further their knowledge and experience in a specialized area and to develop their own distinct program of research. Postdoctoral fellowships may be held at any academic institution in Canada or abroad while Industrial R&D Fellowships are held at the facilities of a company that conducts research.

The evaluation of these programs considers the number of students and fellows gaining research and professional experience, the employment and salary levels of past award recipients compared to the general population, and the average degree completion rate and time to completion of award recipients compared to the general population.

## 1.3 Attract and retain faculty

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Canada Research Chairs | $133.2 | $133.2 | $133.2 |
| Industrial and Other Research Chairs | $29.6 | $29.7 | $29.7 |
| Prizes | $2.1 | $2.1 | $2.1 |
| **Total** | **$164.9** | **$165.0** | **$165.0** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 23 FTE | 23 FTE | 23 FTE |

This program activity includes a number of Chair programs that strengthen research excellence and teaching at Canadian universities by providing support for faculty in specific fields.

Such programs address NSERC's priority of building on Canada's strength in discovery by creating the conditions that will attract world-class scientists and engineers to develop and continue their careers in Canada. Furthermore, research chairs in areas of interest to particular industries enable Canadian-based businesses to build long-term relationships with university faculty and more rapidly realize the benefits of public investment in university research.

These faculty support programs include:

- **Canada Research Chairs** – This tri-council program supports up to 2,000 professors across Canada, including 600 positions within the NSE. The program's key objective is to enable Canadian universities to achieve the highest levels of research excellence and to become world-class research centres in the global, knowledge-based economy.

- **Industrial Research Chairs** – This program helps universities develop a critical mass of expertise and long-term relationships with corporate partners in areas of research that are of importance to industry. Industrial Research Chairs can also enhance the ability of universities to recruit senior-level researchers and research managers from industry or other sectors.

- **Other Chairs and Faculty Support Programs** – Support of university faculty in targeted areas such as Northern Research, Design Engineering and Women in Science and Engineering encourages capacity building in areas with specific needs.

  The University Faculty Awards program has been re-designed to enhance the recruitment, retention and early career progression of women and Aboriginal people in tenure-track faculty positions in the natural sciences and engineering, in Canadian universities, by providing opportunities for them to establish a strong research record.

- **Prizes** – NSERC prizes recognize outstanding Canadian researchers, research teams and students. They enhance the career development of highly promising scientists and engineers and celebrate the sustained excellence of Canadian university faculty members. They also publicly recognize lasting partnerships in R&D between university and industry, and celebrate young Canadian entrepreneurs. Examples of NSERC prizes include the Gerhard Herzberg Canada Gold Medal for Science and Engineering, the E.W.R Steacie Memorial Fellowships, the Synergy Awards for Innovation and the Innovation Challenge Awards.

Faculty support programs are evaluated based on performance indicators such as the number of researchers attracted to and retained by Canadian universities, the impact of supported faculty on the research teams with which they work, the number of continuing collaborations established through such support, the number of students and fellows trained by the supported researcher, and the number of publications, patents and new products developed by supported researchers.

## Strategic Outcome #2: High Quality Canadian-based Competitive Research in the NSE

Support for basic research provides the foundation for scientific and technological advances, and ensures Canadian universities train new researchers in a world-class research environment. Furthermore, funds for research in areas of strategic importance enable Canada to develop research capacity in these important economic sectors and emerging areas of science. These programs also support the creation of scientific knowledge in Canada and the ability to draw on such knowledge generated around the world.

## Program Activities

### 2.1 Fund basic research

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Discovery Grants[20] and Accelerator Supplements | $334.3 | $336.7 | $338.7 |
| Special Research Opportunity Grants | $11.1 | $10.1 | $12.5 |
| Research Capacity Development in Small Universities | $2.2 | $2.1 | $2.1 |
| Research Tools and Instruments | $8.5 | $3.8 | $3.8 |
| Major Resources Support Grants | $29.8 | $32.8 | $23.8 |
| General Support | $1.5 | $1.5 | $1.5 |
| **Total** | **$387.4** | **$387.0** | **$382.4** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 127 FTE | 127 FTE | 127 FTE |

This program activity focuses on basic research that provides the foundation for advances in all disciplines within the NSE, and also trains people who can generate new knowledge in Canada. Furthermore, funding for basic research ensures Canada has the capacity to access and understand knowledge created at other research institutions internationally. This is critical, as Canada performs only 3% of the world's research activity and generates 4% of the world's scientific knowledge, as measured by published scientific papers.[21]

This program activity supports NSERC's priority of building on Canada's strength in discovery by providing support for Canadian researchers to conduct their programs of research.

Programs within this activity include:

- **Discovery Grants and Accelerator Supplements** – The discovery, innovation and training capabilities of university researchers in the NSE are highly dependent on the availability of stable support for the direct costs of maintaining an ongoing program of basic research. The Discovery Grants program is the mainstay of support for university-based research, and accounts for 38% of NSERC's total grants budget.

[20] Includes funding for Discovery Grants to groups and individuals, subatomic physics projects, institutes, ship time and Northern Research Supplement funding.

[21] NSERC Departmental Performance Report 2005-06, Figure 18: http://www.tbs-sct.gc.ca/dpr-rmr/0506/NSERC-CRSNG/nserc-crsng01_e.asp

These grants recognize that creativity and innovation are at the heart of all research advances, whether made individually or in groups. Researchers have the flexibility to make adjustments to their program of research to pursue new avenues, provided they still fall within NSERC's mandate. To be funded they must demonstrate both research excellence and high productivity.

Discovery Accelerator Supplements will provide a small number of Discovery Grant recipients with substantial and timely additional resources in order to accelerate progress and maximize the impact of outstanding research programs.

- **Special Research Opportunity Grants (SRO)** – This open and responsive program enables researchers to pursue emerging research opportunities at the time they become apparent, or investigate and develop collaborations to respond to national and international research opportunities and invitations. These grants provide a mechanism for supporting research breakthroughs and high-risk research, and for investigating and developing time-sensitive new collaborations in Canada or abroad. This program supports pre-research workshops and research projects of up to three years.

  Through this program, NSERC can respond to new research funding opportunities by issuing targeted calls for proposals, addressing the priority of seizing emerging research opportunities. This is particularly important in situations where there is a limited "window of opportunity" to address a particular research interest, such as the opportunity to participate in a multi-agency collaborative research effort.

- **Research Capacity Development in Small Universities** – This pilot program was launched in 2004 and helps reduce barriers to increased research productivity faced by smaller universities. This pilot program is discussed in Section III.

- **Research Tools and Instruments Grants (RTI)** – RTI grants enable professors to purchase the laboratory equipment necessary to conduct world-class research. This critical source of funding ensures researchers have access to the modern research tools required to ensure the maximum return on other investments in research, such as Discovery Grants.

  While there are three categories of RTI grants, only RTI 1 grants (which fund equipment purchases between $7,000 and $150,000) are currently being considered. The RTI 2 and 3 grants (which fund research equipment and installations greater than $150,000) have been under a moratorium since 2003-04, as budget pressures faced by NSERC would result in an unacceptably low competition budget and funding rate and since these needs are currently more appropriately met through the CFI.

- **Major Resources Support (MRS)** – The MRS program (formerly Major Facilities Access Grants) supports researchers' access to major regional, national or international research facilities by helping these facilities remain in a state of readiness for researchers to use. This program is the vehicle for NSERC investments in facilities such as the Canadian Light Source synchrotron, the Sudbury Neutrino Observatory and high performance computing resources.

In 2006-07, NSERC developed a new mechanism for funding of large facilities and institutes. Following consultations with the research community, the new MRS program was announced on July 4th, 2006.

- **General Support** – Miscellaneous grants for proposals that do not fit any of NSERC's defined programs, but still fall within NSERC's mandate, may be funded through this small budget envelope. Parental leave supplements for students and postdoctoral fellows supported through NSERC awards are also paid through General Support.

Performance indicators for these programs include data on the creation and dissemination of knowledge to the research community and end users, the practical research experience gained by students and fellows who work with supported researchers, the employment of postgraduate students in well-paying jobs, and the diversified intellectual and infrastructure base maintained at postsecondary institutions across Canada.

The performance of the SRO program is evaluated based on the increase in international collaborations in which Canadian researchers participate, the number of long-term research collaborative relationships initiated through such support and recognized breakthroughs in research areas supported by the program.

## 2.2 Fund research in strategic areas

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Strategic Project & Workshop Grants[22] | $49.6 | $51.6 | $51.6 |
| Collaborative Health Research Projects | $4.3 | $4.3 | $4.3 |
| **Total** | **$53.9** | **$55.9** | **$55.9** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 28 FTE | 28 FTE | 28 FTE |

This program activity funds projects in areas of research that are of strategic importance to Canada.

This program activity addresses NSERC's priority of seizing emerging research opportunities. In addition, NSERC funds encourage experts in these areas of interest to pursue their research careers in Canada, and also help Canadians realize the benefits of public investments in research. Finally, students and fellows involved in such projects receive excellent training in disciplines of national importance.

[22] Includes Innovation Platforms

Programs within this activity include:

- **Strategic Project & Workshop Grants** – This program increases research and training in targeted areas that could strongly enhance Canada's economy, society and/or environmental stewardship within the next 10 years.

  NSERC has completed a review of target areas for this program, and the target areas for 2006-07 to 2011-12 are:

  - Advanced Communications and Management of Information
  - Biomedical Technologies
  - Competitive Manufacturing and Value-Added Products and Processes
  - Healthy Environment and Ecosystems
  - Quality Foods and Novel Bioproducts
  - Safety and Security
  - Sustainable Energy Systems (Production, Distribution and Utilization)

  Strategic Workshop Grants foster the development of new university-industry research relationships through the support of workshops to plan collaborative research initiatives. Workshops are co-led by business and university researchers.

  In order to consolidate support in strategic areas, the seven target areas listed above will also be applied to the Strategic Network Grants program described on page 32.

- **Innovation Platforms** – Through this initiative, NSERC plays a more strategic role in shaping the direction of Canadian research in a targeted area. There are two active projects, the Nano Innovation Platform,[23] established in 2002-03, and the Quantum Works[24] Innovation Platform approved by Council in October 2005 that will accelerate Canadian research and training in areas of quantum information and computing. Funding for Innovation Platforms is contained within the budget of the Strategic Project and Workshop Grants program.

- **Collaborative Health Research Projects** – Funded jointly with the Canadian Institutes of Health Research (CIHR), this program supports focused collaborations involving convergence of a field of the NSE and the health sciences. Projects are expected to lead to health benefits for Canadians, more effective health services or economic development in health-related areas.

These programs are evaluated on a variety of indicators, including data on knowledge creation and dissemination; experience gained by students and fellows supported through such research and subsequent employment and salary levels; the development of relationships between partners; and the increased collaboration between researchers in different disciplines and the new knowledge or technologies that result from such interdisciplinary collaborations.

[23] http://www.physics.mcgill.ca/NSERCnanoIP/
[24] http://www.quantumworks.ca/

## Strategic Outcome #3: Productive Use of New Knowledge in the NSE in Canada

Wealth is created when Canadians add value in producing goods and services that are sold in world markets. Knowledge is the modern basis for adding value. NSERC aims to maximize the value of public investments in research for the benefit of all Canadians by promoting research-based innovation, university-industry partnerships, technology transfer activities and the training of people with the required scientific and business skill sets to create wealth from discoveries in the NSE.

## Program Activities

### 3.1 Fund university-industry-government partnerships

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Collaborative Research and Development Grants | $46.3 | $46.3 | $46.3 |
| Research Partnership Agreements | $3.3 | $1.9 | $1.9 |
| Networks of Centres of Excellence | $40.2 | $40.2 | $40.2 |
| Strategic Network Grants | $15.3 | $16.2 | $16.1 |
| **Total** | **$105.1** | **$104.6** | **$104.5** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 79 FTE | 79 FTE | 79 FTE |

This program activity fosters collaboration between university researchers and other sectors, including government and industry, in order to develop knowledge and expertise in response to expressed needs, and to transfer this knowledge and expertise to Canadian-based organizations in accordance with their identified needs. This activity supports NSERC's priority of realizing the benefits of public investments in research.

Programs within this activity include:

- **Collaborative Research and Development Grants** – This program enables companies to access the unique knowledge, expertise and resources available at Canadian postsecondary institutions, and offers opportunities for mutually beneficial collaborations, jointly funded by NSERC and the industrial partner(s), which result in economic benefits to Canada. It also facilitates world-class research and ensures a strong source of well-trained graduates.

- **Research Partnership Agreements** – The objective of these partnerships is to build strong research linkages between the private sector, researchers in universities and

researchers in federal institutes. Agreements with Agriculture and Agri-Food Canada, the Canadian Forest Service and the Earth Sciences Sector of Natural Resources Canada have or will expire by March 31, 2007. The agreement with the Department of National Defence will continue; two to four new applications are received each year under this agreement.

- **Networks of Centres of Excellence (NCEs)**[25] – These unique partnerships among universities, industry, government and not-for-profit organizations work to turn Canadian research and entrepreneurial talent into economic and social benefits for all Canadians. They are nationwide, multidisciplinary and multi-sectoral research partnerships that link excellent research with industrial know-how and strategic investment. They create a critical mass of research capacity dedicated to developing new knowledge and applying it for the economic, social and health benefits of Canadians.

- **Strategic Network Grants**[26] – this program funds large scale, complex research programs that involve multi-sectoral collaborations on a common research topic. The topic to be investigated can be of local concern, requiring a focused local network, or of regional or national importance, requiring a larger network. The Strategic Network Grants program supports research projects within the target areas identified for the Strategic Project Grants program approved by NSERC's Council in late 2005 (see p. 30).

Performance indicators for each program vary depending on their particular nature and purpose, but may include criteria such as: research funds leveraged from partners; knowledge creation and dissemination to the research community and users; experience gained by students and fellows and subsequent employment and income levels; long-term relationships established between partners; numbers of patents and licences generated; products, processes or services developed or improved; and economic value of intellectual property generated through funded research.

## 3.2 Support commercialization

**Financial Resources ($ millions)**

| Program | 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|---|
| Intellectual Property Mobilization | $3.4 | $3.0 | $3.0 |
| Idea to Innovation | $9.2 | $9.8 | $9.9 |
| College and Community Innovation | $1.8 | $1.8 | $1.8 |
| **Total** | **$14.4** | **$14.6** | **$14.7** |

**Human Resources**

| 2007-2008 | 2008-2009 | 2009-2010 |
|---|---|---|
| 6 FTE | 6 FTE | 6 FTE |

[25] A list of all 23 NCEs is available at: http://www.nce.gc.ca/nets_e.htm
[26] A list of all Strategic Networks is available at: http://www.nserc.gc.ca/stratnet/

This program activity supports innovation and promotes the transfer of knowledge and technology to Canadian companies.

It directly addresses NSERC's priority of realizing the benefits by funding the pre-commercial development of promising innovations, supporting technology transfer activities and R&D at Canadian universities, and supporting the training of people with the scientific and business skills sets required to harness new discoveries for economic benefit.

Activities in this program include:

- **Intellectual Property Mobilization (IPM) Program** – This tri-council program accelerates the transfer of knowledge and technology residing in Canadian universities and hospitals for the benefit of Canada. In partnership with universities, the IPM program supports regionally-based university networks related to managing and transferring intellectual property resulting from publicly funded research performed at universities.

  The Networked Training Initiative is a critical component of the IPM program. This successful initiative provides seed funding for the development of specialists of technology transfer and commercialization through internship programs.

- **Idea to Innovation Program** – I2I accelerates the pre-competitive development of promising technologies and promotes their transfer to Canadian companies. The program supports R&D projects with recognized technology transfer potential by providing crucial assistance to researchers in the early stages of technology validation and market connection. In February 2006, NSERC extended eligibility for this program to include faculty members from eligible colleges[27] across Canada.

  The I2I program helps increase the rate of technology transfer of university and college advances by providing a flexible funding arrangement in two phases. The first is a proof-of-concept phase, during which NSERC supports 100% of the costs of R&D. The second phase focuses on technology enhancement, and research costs in this phase are jointly supported by NSERC and a private-sector partner.

- **College and Community Innovation Program** – This pilot program increases the capacity of colleges to support innovation at the community or regional level. The program design and funding are intended to stimulate new partnerships and increased entrepreneurship, and to help the colleges take risks and be nimble in developing new ways of working with local businesses and industries to spur innovation and economic growth.

Each of these programs will be evaluated according to criteria appropriate to their nature and objective. The IPM program will be assessed on the performance of supported institutions in managing their intellectual property (IP) assets for economic and social benefits, as well as the number of commercialization specialists trained and their subsequent employment and income levels. The I2I program will be evaluated on the number of patents, licences, copyrights and new products and services developed as well as the number of continuing collaborations on new projects between college and university faculty and industrial partners.

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[27] A list of eligible colleges is available at: http://www.nserc.gc.ca/institution/list_inst_e.htm

# SECTION III – SUPPLEMENTARY INFORMATION

## *Organizational Information*

NSERC is a separate employer of the Government of Canada, reporting to Parliament through the Minister of Industry, and governed by a Council as mandated in the *Natural Sciences and Engineering Research Council Act (1985)*.[28]

### Mandate

The functions of NSERC, based on the authority and responsibility assigned to it under the *Natural Sciences and Engineering Research Council Act* (1976-77, c.24), are to:

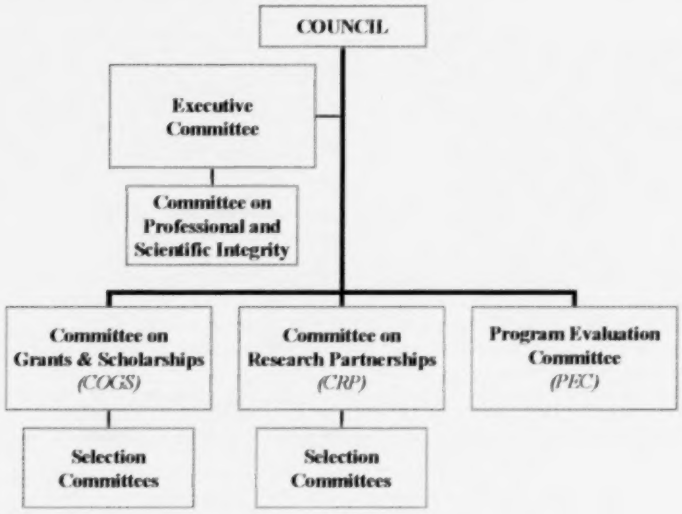
- Promote and assist research in the natural sciences and engineering, other than the health sciences; and
- Advise the Minister in respect of such matters relating to such research as the Minister may refer to the Council for its consideration.

### Council and Governance Structure

NSERC is governed by a Council which consists of a president and 21 members who are drawn from universities as well as from the private and public sectors, and are appointed by the Governor-in-Council. Members serve part-time and receive no remuneration for their participation. NSERC's President serves full-time and functions as the Chair of the Council and the Chief Executive Officer.

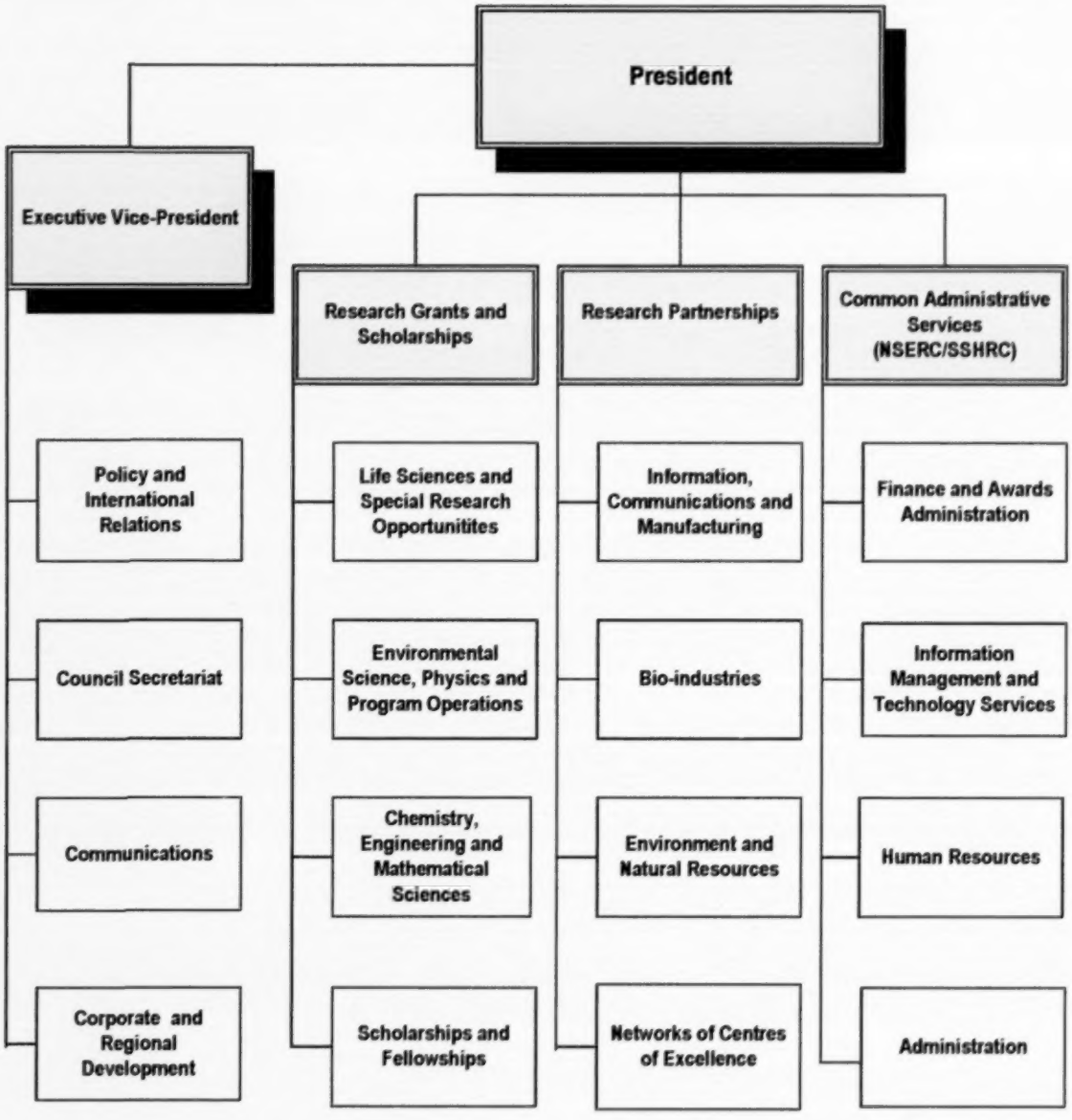
### NSERC Governance Structure

The diagram below describes NSERC's governance structure.




[28] The *Natural Sciences and Engineering Research Council Act* was first passed in 1977. A modification to the Act was passed in 1985 (http://laws.justice.gc.ca/en/N-21/index.html).

## NSERC Organizational Chart




NSERC and the Social Sciences and Humanities Research Council (SSHRC) share a Common Administrative Services Directorate which is responsible for finances, facilities, security, human resources and information services for both Councils. This structure maximizes the efficiency of both Councils' administrative requirements and is one of the reasons that NSERC is able to maintain its administration budget at 5% of total planned spending.

## Departmental Links to Government of Canada Outcomes

| 2007–2008 | | | | | |
|---|---|---|---|---|---|
| ($ millions) | Budgetary | | Total Main Estimates | Adjustments (Planned Spending not in Main Estimates) | Total Planned Spending |
| | Operating | Grants | | | |
| ***Strategic Outcome 1: People: Highly skilled science and engineering professionals in Canada*** | | | | | |
| Program Activity 1.1: Promote Science and Engineering | 0.2 | 3.9 | 4.1 | | **$4.1** |
| Program Activity 1.2: Support Students and Fellows | 6.8 | 129.6 | 136.4 | | **$136.4** |
| Program Activity 1.3: Attract and Retain Faculty | 2.9 | 164.9 | 167.8 | | **$167.8** |
| ***Strategic Outcome 2: Discovery: High quality Canadian-based competitive research in the natural sciences and engineering*** | | | | | |
| Program Activity 2.1: Fund Basic Research | 16.2 | 387.2 | 403.4 | 0.2[29] | **$403.6** |
| Program Activity 2.2: Fund Research in Strategic Areas | 3.8 | 53.9 | 57.7 | | **$57.7** |
| ***Strategic Outcome 3: Innovation: Productive use of new knowledge in the natural sciences and engineering in Canada*** | | | | | |
| Program Activity 3.1: Fund University-Industry-Government Partnerships | 9.9 | 105.1 | 115 | | **$115** |
| Program Activity 3.2: Support Commercialization | 0.8 | 14.4 | 15.2 | | **$15.2** |

All of NSERC's program activities contribute to the achievement of the Government of Canada's "Innovative and Knowledge-based Economy" outcome area (within the Economic Affairs cluster).

[29] An additional $0.2M has been allocated to NSERC's operating budget in support of internal audit activities for 2007-08 by the Secretariat of the Treasury Board.

## *Pilot Programs and Recent Initiatives*

NSERC has developed and implemented several pilot programs to address particular issues such as research capacity, technology transfer from colleges to industry, and the training of young Canadians in fundamental science and mathematics concepts.

## Pilot Programs

The following programs are currently funded on a pilot basis. In all cases, a national competition was held to award grants for the pilot phase and the programs are being monitored to determine their impact on the issues they aim to address. These pilot programs have been designed so that results can be measured against the program objectives early in the life of the program. For pilot programs that have a positive impact relative to their stated objectives, continued funding for the program will be sought.

- **College and Community Innovation** – When technical expertise is made available to local industry, and particularly to small business, the local capacity for innovation is enhanced. In October 2004, NSERC awarded six grants to increase the capacity of community colleges, institutes of technology and Cégeps to work with local industry and businesses and to advance innovation at the community and regional level. NSERC is working with the colleges funded through this program to measure its progress and impact. An evaluation of this pilot program was initiated in the second half of 2006. Evaluation results are expected by the end of the first quarter of 2007.

- **Research Capacity Development in Small Universities** – Researchers in smaller universities across Canada face particular challenges in establishing high quality research programs. Some universities have a very limited supply of graduate students due to a lack of graduate programs, while universities in rural areas may have difficulty establishing partnerships with a diverse range of businesses. To make the most of Canada's research talent, wherever it is located, NSERC launched a pilot program to help small universities further develop their research capabilities. Seven awards were announced in October 2004 to help small universities build the foundations and reduce barriers to increased productivity in research. To date, analysis of progress reports submitted by recipient institutions suggests that the program is meeting its objectives. NSERC staff will visit the seven institutions in 2007 to discuss progress and the impact of the awards on the institutions' research environments. The outcomes of these discussions will support the formal evaluation of the program which is planned for 2008.

- **Centres for Research in Youth, Science Teaching and Learning (CRYSTALs)** – To be counted among the world's most innovative people, Canadians must build a stronger foundation of understanding and appreciation of science and math, and attract more of the brightest youth to science and engineering careers. CRYSTALs are multi-disciplinary research centres that work with the provinces to improve research into primary and secondary school science and math education. In May 2005, five grants were announced for such centres across Canada. By late May 2006, all Centres had submitted progress

reports for Year 1. The first National CRYSTALs Meeting was held in November 2006, bringing together participants from all five Centres; a second national meeting is planned for November 2007. Site visits by NSERC staff to all Centres are planned for 2007 and will be part of the program evaluation preparation phase. A program evaluation is planned for 2009.

## Recent Initiatives

- **Regional Offices** – NSERC is committed to building a network of small regional offices to play a stronger role in research, training and innovation in all regions of the country. NSERC-Atlantic was officially opened in Moncton, New Brunswick, in July 2004 and a second regional office, NSERC-Prairies began operation in September 2005 in Winnipeg, Manitoba, with an official opening in June 2006. Between mid-May and October 2006, staffing was completed for NSERC-Pacific, the third NSERC regional office, which is located in Vancouver, British Columbia, and will be officially opened early in 2007. Planning is underway to open offices in Québec and Ontario in the near future.

  While the mandate of each regional office is tailored to the needs and makeup of the community it serves, in general their role includes:

  - **Presence** – Being aware of the needs of clients and partners and participating in the development of new opportunities for the region;
  - **Access to programs** – Promoting greater understanding in the region of the programs and opportunities provided by NSERC; and
  - **Promotion** – Showcasing science and engineering, celebrating research and innovation successes, and promoting science and math education.

## *Measuring the Impact of Government Investments*

It is important to demonstrate to Canadians the results of public investments in research, training and innovation, and to ensure that such investments are the most efficient and effective methods of furthering the goals of Canada's productivity and prosperity agenda.

NSERC is committed to monitoring the results of its investments. It maintains a long-term evaluation plan to ensure its programs are reviewed regularly and program mechanisms are achieving their intended objectives. NSERC posts the results of program evaluations on its Web site, and each year provides information on all scholarships, fellowships and grants awarded as well as key statistics relating to Canadian research, training and innovation performance.

NSERC will continue to work with its stakeholder communities, other funding agencies, and other federal departments and agencies to ensure that the information collected and disseminated properly demonstrates the impact of such public investments. *See Table 6: Internal Audits and Evaluations.*

## *NSERC Participation in Government-Wide Initiatives*

NSERC is committed to organizational innovation to improve its program delivery and reach, and to better communicate the impact of publicly funded research on quality of life. To further this goal, NSERC is an active participant in federal working groups and multi-departmental initiatives.

NSERC will continue to liaise with science-based departments and agencies on government priorities and issues that transcend a single department's mandate. NSERC will also pursue opportunities to develop policies and initiatives in conjunction with SSHRC and CIHR, especially when such initiatives relate to research that falls within the mandate of more than one granting agency, or where common policies, procedures and systems will provide more efficient service for the Canadian research community.

The agencies will continue to enhance the very strong coordination and collaborations that are in place in the management of tri-council programs such as the Networks of Centres of Excellence, the Canada Research Chairs and the Indirect Costs of Research, as well as stewardship and control initiatives such as the tri-council Secretariat on Research Ethics, the Interagency Advisory Panel on Research Ethics and the Memorandum of Understanding on the Roles and Responsibilities in the Management of Federal Grants and Awards. Another example of harmonized stewardship are the monitoring activities at institutions receiving funding from the granting agencies, to ensure that they have appropriate control frameworks in place. These are conducted jointly by NSERC, SSHRC and CIHR.

In the area of electronic business solutions, NSERC and SSHRC have established a new bi-council Integrated Management/Information Technology (IM/IT) Steering Committee to replace their respective equivalent steering committees. In June 2006, three strategic priorities and nine business objectives were approved by the Steering Committee. In conjunction with this initiative the Electonic Service Delivery and eBusiness approaches and teams were consolidated. The resulting team, the Electronic Business Solutions team (EBS), has defined a new mandate which currently serves as a focal point for the IM/IT consolidation effort across the three functional teams involved in the endeavour. The EBS vision and accompanying strategic themes have been documented and are being used to prioritize and align IM/IT projects and initiatives to the bi-council priorities and objectives. In this context, both Councils have adopted a standards-based approach for their electronic business initiatives. Subsequently, both Councils became foundational members of a new impartial standards body which will promote the definition and adoption of standards across the research funding and administration domain. The Consortia Advancing Standards in Research Administration Information (CASRAI) is expected to release its first standard in the first quarter of 2007.

## Service Improvement Initiative (SII)

In compliance with the SII instituted by the Secretariat of the Treasury Board of Canada, NSERC has developed and published service standards, and established baselines and targets designed to achieve significant, measurable and sustainable improvement in client satisfaction with services it provides. These baselines are based on surveys conducted since 2004 with NSERC's main clients regarding their satisfaction levels with the key services delivered by NSERC.

NSERC has developed a structured service improvement plan that covers the key services it provides to its clients. The plan details the expectations and priorities for service improvement throughout NSERC, and calls for periodic client-satisfaction surveys with the objective of improving service delivery, and for updating the current client-centred internal service standards applied by NSERC's directorates.

Most of NSERC's key services are delivered to its clients through the eSubmission system, the Web site, and the Help Desk service. For these key services, NSERC has established baseline client satisfaction levels and performance improvement targets. Information on performance and service standards is available on NSERC's Web site at http://www.nserc.gc.ca/about/p_s_standards_e.asp.

NSERC will also continue to refine its on-line application submission and peer review systems. In the medium-term, this will include developing new tools for the on-line review and evaluation of applications by selection committee members and external referees. It will also include collaboration with SSHRC to improve clients' ability to conduct all of their business with the granting agencies electronically.

## *Table 1: Departmental Planned Spending and Full-Time Equivalents*

| ($ millions) | Forecast Spending 2006-2007 | **Planned Spending 2007-2008** | Planned Spending 2008-2009 | Planned Spending 2009-2010 |
|---|---|---|---|---|
| 1.1 - Promote Science and Engineering | 1.5 | **4.1** | 4.1 | 4.1 |
| 1.2 - Support Students and Fellows | 135.2 | **136.4** | 134.6 | 130.3 |
| 1.3 - Attract and Retain Faculty | 163.8 | **167.8** | 167.9 | 167.9 |
| 2.1 - Fund Basic Research | 411.9 | **403.4** | 403.2 | 398.5 |
| 2.2 - Fund Research in Strategic Areas | 47.9 | **57.7** | 59.7 | 59.7 |
| 3.1 - Fund University-Industry-Government Partnerships | 107.5 | **115.0** | 114.4 | 114.4 |
| 3.2 - Support Commercialization | 17.5 | **15.2** | 15.4 | 15.4 |
| | | | | |
| Budgetary Main Estimates (gross) | | | | |
| | | | | |
| Non-Budgetary Main Estimates (gross) | | | | |
| Less: Respendable revenue | | | | |
| **Total Main Estimates** | **885.3** | **899.6** | **899.3** | **890.3** |
| *Adjustments:* | | | | |
| ***Supplementary Estimates*** | | | | |
| Federal Budget 2006 Funds | 16.9 | | | |
| Operating Carry-forward from 2005-06 | 1.6 | | | |
| International Polar Year Operating Funds | 0.7 | | | |
| Transfer from Industry Canada to support the France-Canada Research Fund | 0.2 | | | |
| Compensation for Salary Adjustments | 0.1 | | | |
| Procurement Savings | (0.3) | | | |
| Transfer to DND for Canada Research Chairs at RMC | (0.3) | | | |
| ***Other*** | | | | |
| Internal Audit | | 0.2 | | |
| *Total Adjustments* | 18.9 | 0.2 | 0.0 | 0.0 |
| **Total Planned Spending** | **904.2** | **899.8** | **899.3** | **890.3** |
| | | | | |
| Total Planned Spending | | | | |
| Less: Non-Respendable revenue | (1.0) | (1.0) | (1.0) | (1.0) |
| Plus: Cost of services received without charge | 5.0 | 5.0 | 5.0 | 5.0 |
| **Total Departmental Spending** | **$908.2** | **$903.8** | **$903.3** | **$894.3** |
| | | | | |
| **Full-Time Equivalents** | **313** | **319** | **319** | **319** |

## Table 2: Voted and Statutory Items Listed in Main Estimates

| Vote or Statutory Item ($ millions) | Truncated Vote or Statutory Wording | **Current Main Estimates** | Previous Main Estimates |
|---|---|---|---|
| 70 | Operating expenditures | **$36,537** | $36,002 |
| 75 | Grants | **$858,915** | $845,165 |
| (S) | Contributions to employee benefit plans | **$4,099** | $4,091 |
| | **Total Department or Agency** | **$899,551** | **$885,258** |

## Table 3: Services Received Without Charge

| **2007-08** | |
|---|---|
| ($ millions) | **Total** |
| | |
| Accommodation provided by Public Works and Government Services Canada (PWGSC) | $3.3 |
| Contributions covering employers' share of employees' insurance premiums and expenditures paid by TBS (excluding revolving funds) | $1.6 |
| Worker's compensation coverage provided by Human Resources and Social Development Canada | $0.0 |
| Salary and associated expenditures of legal services provided by Justice Canada | $0.0 |
| Other services provided without charge | $0.1 |
| | |
| *Total Services Received without Charge* | $5.0 |

## *Table 4: Sources of Non-Respendable Revenue*

| | Forecast Revenue | **Planned Revenue** | Planned Revenue | Planned Revenue |
|---|---|---|---|---|
| ($ millions) | 2006-07 | **2007-08** | 2008-09 | 2009-10 |
| ***Natural Sciences and Engineering Research Council*** | | | | |
| **Fund Basic Research** | | | | |
| Refunds of previous years' expenditures | $1.0 | $1.0 | $1.0 | $1.0 |
| | | | | |
| **Total Non-Respendable Revenue** | $1.0 | **$1.0** | **$1.0** | **$1.0** |

## *Table 5: Details on Transfer Payment Programs (TPPs)*

Over the next three years, NSERC will manage the following transfer payment programs in excess of $5 million:

1. Grants and Scholarships
2. Canada Graduate Scholarships

Further information on these transfer payment programs can be found at http://www.tbs-sct.gc.ca/rpp/0708/info/ps-dp_e.asp.

## *Table 6: Internal Audits and Evaluations*

### Completed and Upcoming Evaluations (Last 3 fiscal years)

| 1. Name of Evaluation | 2. Type of Program | 3. Status | 4. Expected Completion Date | 5. Electronic Link to Report |
|---|---|---|---|---|
| Evaluation of the Research Partnership Agreements | Transfer payment | Completed | | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| Fifth-Year Evaluation of the Canada Research Chairs program | Transfer payment | Completed | | http://www.chairs.gc.ca/web/about/publications_e.asp |
| Evaluation of the Reallocations Exercise | Transfer payment | Completed | | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| Evaluation of SPARK | Transfer payment | Completed | | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| Evaluation of the University Faculty Awards Program | Transfer payment | Completed | | |
| Evaluation of the Industrial Research Chairs program | Transfer payment | Completed | | |
| Joint Evaluation of Research Tools and Instruments and Major Resources Support programs | Transfer payment | In progress | February, 2007 | |
| Mid-Term Review of the College and Community Innovation Pilot program | Transfer payment | In progress | March, 2007 | |
| Evaluation of the Networks of Centres of Excellence program | Transfer payment | In progress | July, 2007 | |
| Mid-term review of the Canada Graduate Scholarships program | Transfer payment | In progress | October, 2007 | |
| Evaluation of the Intellectual Property Management program | Transfer payment | In progress | December, 2007 | |

| 1. Name of Evaluation | 2. Type of Program | 3. Status | 4. Expected Completion Date | 5. Electronic Link to Report |
|---|---|---|---|---|
| Joint Evaluation of the Collaborative Research and Development program and Strategic Project Grants | Transfer payment | Planned | May, 2008 | |
| Mid-term review of the Small University Capacity Development Pilot program | Transfer payment | Planned | March 2008 | |
| Mid-term review of Centres for Research in Youth, Science Teaching and Learning (CRYSTALs) Pilot program | Transfer payment | Planned | March 2008 | |

## Completed and Upcoming Internal Audits (Last 3 fiscal years)

| 1. Name of Internal Audit | 2. Audit Type | 3. Status | 4. Expected Completion Date | 5. Electronic Link to Report |
|---|---|---|---|---|
| **2007 / 2006**<br>Follow-up audits of:<br>- Travel Practices and Expenditures<br>- Information Technology<br>- Award Monitoring Activities<br>- Contract Management Practices | Follow-up audits | Planned | Spring 2007 | N/A |
| **2006 / 2005**<br>Audit of NSERC and SSHRC Travel Practices and Expenditures | Assurance - Compliance | Completed | October 2005 | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| **2005 / 2004**<br>Audit of the Information Technology | Assurance – Functional & General Management | Completed | February 2005 | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| Audit of the electronic Common Information Management System (eCIMS) Development Project | Systems Under Development (SUD) Audit | Completed | December 2004 | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| System Under Development Audit of the eBusiness Project – 2004 | Systems Under Development (SUD) Audit | Completed | June 2004 | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| Assessment of NSERC/SSHRC Award Monitoring Activities | Assurance - Compliance | Completed | June 2004 | http://www.nserc.gc.ca/about/aud_eval_e.asp |
| Audit of Contract Management Practices in the Common Administrative Services Directorate (CASD) | Assurance - Compliance | Completed | May 2004 | http://www.nserc.gc.ca/about/aud_eval_e.asp |

# SECTION IV – ANNEXES

## *Annex 1: List of Abbreviations*

| | |
|---|---|
| CFI | Canada Foundation for Innovation |
| CIHR | Canadian Institutes of Health Research |
| CRYSTALs | Centres for Research in Youth, Science Teaching and Learning |
| FTE | Full-Time Equivalent |
| HQP | Highly Qualified People |
| I2I | Idea to Innovation |
| IP | Intellectual Property |
| IPM | Intellectual Property Mobilization |
| IPY | International Polar Year |
| MRS | Major Resources Support |
| NCE | Networks of Centres of Excellence |
| NSE | Natural Sciences and Engineering |
| NSERC | Natural Sciences and Engineering Research Council |
| PAA | Program Activity Architecture |
| R&D | Research and Development |
| RPP | Report on Plans and Priorities |
| RTI | Research Tools and Instruments |
| SII | Service Improvement Initiative |
| S&T | Science and Technology |
| SME | Small- and Medium-Sized Enterprises |
| SRO | Special Research Opportunity |
| SSHRC | Social Sciences and Humanities Research Council |
| TBS | Treasury Board Secretariat |
| VP | Vice-President |